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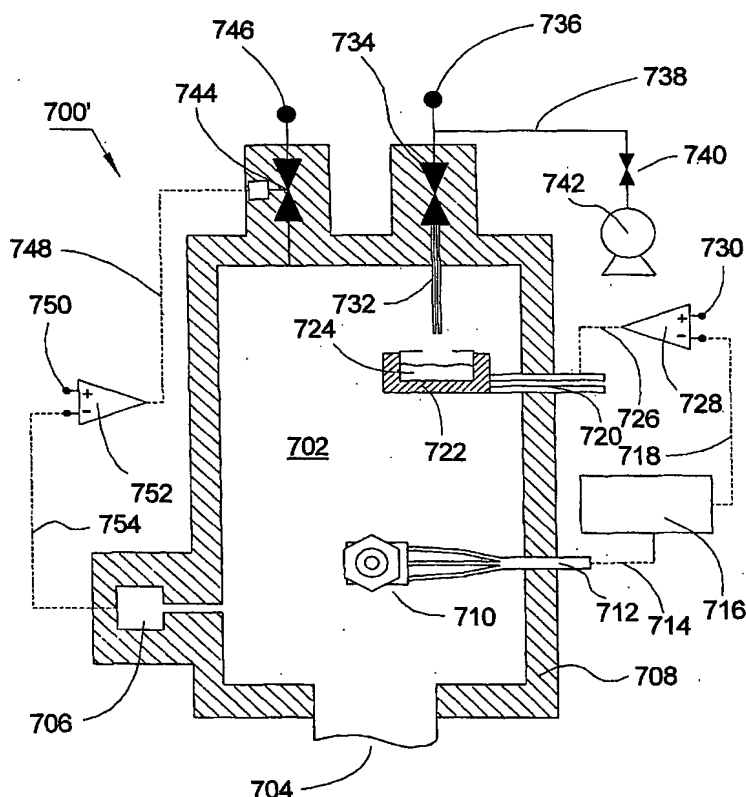
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(54) Title: **IMPROVED ALD APPARATUS AND METHOD**



(57) Abstract: Improved apparatus and method for SMFD ALD include a method designed to enhance chemical utilization as well as an apparatus that implements lower conductance out of SMFD-ALD process chamber while maintaining full compatibility with standard wafer transport. Improved SMFD source apparatuses (700, 700', 700'') and methods from volatile and non-volatile liquid and solid precursors are disclosed, e.g., a method for substantially controlling the vapor pressure of a chemical source (722) within a source space comprising: sensing the accumulation of the chemical on a sensing surface (711); and controlling the temperature of the chemical source depending on said sensed accumulation.



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